NON-PUBLIC?: N
ACCESSION #: 9005070103
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Duane Arnold Energy Center PAGE: 1 OF 3

DOCKET NUMBER: 05000331

TITLE: Manual Reactor Scram Following Loss of Instrument Air
EVENT DATE: 03/29/90 LER #: 90-002-00 REPORT DATE: 04/27/90

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: N POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Ron M. McGee, Technical Support Specialist

TELEPHONE: (319) 851-7602

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On March 29, 1990 with the reactor operating at 100% power, a manual reactor scram was initiated at 0407 hours in response to a rising reactor water level. The rising water was due to feed regulating valve lockup.

At approximately 0245 hours on March 29, 1990, operating air was isolated to an Instrument Air header isolation valve due to a personnel error made in the tagout preparation process. As this operating air pressure slowly bled off, the air header isolation valve failed shut. This loss of instrument air caused the feed regulating valves to lockup.
Reactor level slowly increased to the 195" high level alarm point at 0405 hours. As actions to lower reactor level to within the normal operating range were unsuccessful and various other control valves began to fail due to the loss of instrument air, the Operations Shift Supervisor conservatively elected to direct initiation of a manual scram.

Following the reactor scram, all automatic functions and manual actions were completed satisfactorily.

Corrective actions for this event include a required independent review of Instrument and Service air tagouts, completion of drawing updates,.and a review of the design document change process focusing on potential process improvements.

END OF ABSTRACT

I. DESCRIPTION OF EVENT:

On March 29, 1990 at 0407 hours, with the reactor at 100% power, a manual reactor scram (EIIS System Code JD) was initiated in response to rising reactor water level due to a Feed Regulating Valve (EIIS System. Code SJ) lockup condition. Following the reactor scram, level lowered to less than the low level (170" above top of active fuel (TAF)) as expected, actuating Primary Containment Isolation System (PCIS) groups II through V (EIIS System Code JM). Level quickly recovered and subsequently exceeded the high level (211" TAF) Main Turbine (EIIS System Code TA) and Reactor, Feed Pump (EIIS System Code SJ) trip setpoint. As level again lowered to the low level setpoint, the decision was made to utilize the Reactor Core Isolation Cooling system (RCIC, EIIS System Code BN) to maintain level throughout the remainder of the event. The RCIC system was manually started and reactor level was adequately maintained. The Turbine Electro Hydraulics Control (EHC, EIIS System Code TG) system adequately controlled reactor pressure throughout the event as expected.

II. CAUSE OF EVENT:

During the evening shift of March 28, 1990, a tagout was prepared to isolate Makeup Demineralizer (MUD, EIIS System Code KJ) service air (EIIS System Code LF) pressure control valve, PCV5359, for maintenance. To determine the upstream air isolation for PCV5359, the preparer was required to go to a second.drawing (Compressed Air System). When going to the second drawing a personnel error led to the wrong sheet of the compressed air system drawing being used. This wrong sheet included a valve near the expected grid location labelled as a supply to MUD control valves. This manual valve was incorrectly chosen as an isolation to be included on the tagout. Compounding the problem was an error on the print which incorrectly identified this manual valve's purpose. The manual valve actually supplies control air to an instrument air header isolation valve.

The local valve identification tag also incorrectly
dentified its
purpose as reflected on the drawing as a supply to the MUD control
valves.

The tagout was issued and the manual valve was closed at approximately 0245 hours on March 29, 1990. In the following hour and fifteen minutes the control air slowly bled off the instrument air header isolation valve operator and the isolation valve failed closed. By 0402 hours the isolated air header had depressurized sufficiently to cause a feed regulating valve lockup and reactor level began to rise. A reactor high level alarm was recieved at 0405. As attempts to lower level were unsuccessful and various other valves supplied by instrument air began to fail, a manual reactor scram was inserted at 0407 with reactor level at approximately 205".

III. ANALYSIS OF THE EVENT:

Following the initiation of the manual scram, reactor level lowered to less than the low level RPS trip setpoint and subsequently exceeded the high level turbine/feed pump trip setpoint. All automatic actions and trips occurred as expected. The RCIC system was utilized to stabilize reactor level after the reactor feed pumps were tripped. The turbine EHC system adequately controlled reactor pressure throughout the event. All system responses were as expected.

IV. CORRECTIVE ACTIONS:

A Human Performance Enhancement System (HPES) evaluation was utilized in determining potential causes and corrective actions concerning this event.

The system drawing error was previously identified in an extensive system walkdown and the resulting Design Document Change (DDC) process was taking place when this event occurred. Completion and implementation of this DDC will be completed by December 31, 1990.

A review of existing DDC Packages for safety significance has been completed.

The processing of design document changes is being reviewed for potential improvements in the communication of identified drawing discrepancies to the Control Room. This review will be completed by May 30, 1990.
Until the DDC has provided updated drawings to the Control Room, a policy

of requiring an independent review of all instrument and service air system tagouts has been implemented.

The tagout process is being reviewed to identify potential improvements. This review will be completed by May 30, 1990.

The manual isolation valve has been relabelled to correctly identify its purpose on the local valve tag. The utility licensed operator involved in the tagout error was counselled.

V. ADDITIONAL INFORMATION:

1. Failed Component Identification:

There were no failed components associated with this event.

2. Previous Similar Events:

A review of Licensee Event Reports did not reveal any previous events associated with misreading of system drawings.

ATTACHMENT 1 TO 9005070103 PAGE 1 OF 1

Iowa Electric Light and Power Company

April 27, 1990
DAEC-90-0342
Mr. A. Bert Davis
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #90-002

Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the subject Licensee Event Report.

Very truly yours,

Rick L. Hannen
Plant Superintendent - Nuclear

RLH/RMM/gt

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

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File A-118a

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